

REMARKS/ARGUMENTS

Claims 1-25 are pending in the application; the status of the claims is as follows:

Claims 1, 4-9, 12-15, 17, 18, 20, 21, 24, and 25 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,858,195 to Ramsey ("Ramsey").

Claims 2, 3, 10, 11, 16, 22, and 23 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ramsey in view of U.S. Patent No. 6,375,871 B1 to Bentsen et al ("Bentsen et al").

Claim 19 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The Office Action does not acknowledge a claim for foreign priority under 35 U.S.C. § 119 (a)-(d), which is contained in the Declaration and Power of Attorney. Submitted herewith is a copy of the postcard receipt showing that the U.S. Patent and Trademark Office acknowledged receipt of the Certified Copy of Priority Document on February 21, 2002. Acknowledgement of our claim for foreign priority and receipt of the priority document is respectfully requested.

To date, no Notice of Draftsperson's Patent Drawing Review has been received. Applicants respectfully request receipt of this document when it becomes available. Please note that the original drawings filed in the patent application are "formal" drawings.

Claims 1, 9 and 21 have been amended to more clearly describe the invention. These changes do not introduce any new matter.

Claims 12, 14, 15 and 24 has been amended to correct antecedent basis. Specifically, claim 12 has been amended to remove reference to "confluence flow pass"

appear in claim 9. Claim 14 has been amended to replace "the confluent," which does not appear in claim 9, with "a mixture of." Claim 24 has been amended to replace "confluence flow pass and mixing flow pass," which does not appear in claim 21, with "fine flow pass." Claim 15 has been amended to add the word "the". These changes do not introduce any new matter.

Claims 2, 3, 10, 11, 22 and 23 have been canceled.

New claims 26-31 have been added to more clearly describe the invention. No new matter has been added.

35 U.S.C. § 102(b) Rejection

The rejection of claims 1, 4-9, 12-15, 17, 18, 20, 21, 24, and 25 under 35 U.S.C. § 102(b) as being anticipated by Ramsey, is respectfully traversed based on the following.

Ramsey discloses a microchip laboratory system that uses an electrokinetic system for transporting the materials stored in the reservoirs through the channel system (col. 7, lines 13-15). Ramsey states that, to "provide such electrokinetic transport, the laboratory system 10 includes a voltage controller 46 capable of applying selectable voltage levels, including ground ... The voltage controller is connected to an electrode positioned in each of the six reservoirs 12-22 by voltage lines V1-V6 in order to apply the desired voltages to the materials in the reservoirs (col. 7, lines 15-24). Ramsey further discloses that controlled electrokinetic transport can be used to dispense a selected amount of material from one of the reservoirs through one or more intersections of the channel structure (col. 9, lines 9-12). Ramsey dispenses the material by applying specific voltage levels to each of the electrodes in the reservoirs. There is no indication in Ramsey of reciprocal movement of the materials in the channel structure.

In contrast to Ramsey, the present invention of claim 1 requires, *inter alia*,

a micro pump which is capable of bi-directional suction and discharge of the specimen and the reagent ...; and
a driver which applies a driving pulse to the micro pump to drive the micro pump for reciprocating motion. (emphasis added).

The invention of claim 1 is thus able to move the specimen and the reagent in both a positive direction and a negative direction. The reaction condition of the specimen and the reagent can be detected or observed by detecting or observing the reciprocal movement.

Since Ramsey does not disclose a micro pump capable of bi-directional suction and discharge, and further does not disclose a driver which drives the micro pump for reciprocating motion, Ramsey cannot anticipate claim 1. Claims 4-8 depend from and contain all the limitations of claim 1. Thus, claims 4-8 are not anticipated by Ramsey for at least the same reasons.

Claim 9 requires, *inter alia*,

a micro pump which is capable of bi-directional suction and discharge of the specimen and the reagent ...; and
a driver which applies a driving pulse to the micro pump for reciprocating motion. (emphasis added).

As discussed above, Ramsey does not disclose a micro pump capable of bi-directional suction and discharge, and further does not disclose a driver which drives the micro pump for reciprocating motion. Thus, Ramsey cannot anticipate claim 9. Claims 12-15 depend from and contain all the limitations of claim 9. Thus, claims 12-15 are not anticipated by Ramsey for at least the same reasons.

Claim 17 requires, *inter alia*, a second step of causing a reciprocal movement along the flow pass to the specimen to which the reagent has been added. (emphasis added).

As discussed above, Ramsey does not disclose reciprocal motion of the specimen. Further, Ramsey does not disclose a step of detecting a change in the reciprocal movement due to a reaction of the specimen and the reagent as claimed in claim 17. Thus, Ramsey cannot anticipate claim 17. Claims 18 and 20 depend from and contain all the limitations of claim 17. Thus, claims 18 and 20 are not anticipated by Ramsey for at least the same reasons.

Claim 21 requires, *inter alia*,

a micro pump which is capable of bi-directional suction and discharge of the specimen and the reagent ...; and
a driver which applies a driving pulse to the micro pump for reciprocating motion. (emphasis added).

As discussed above, Ramsey does not disclose a micro pump capable of bi-directional suction and discharge, and further does not disclose a driver which drives the micro pump for reciprocating motion. Thus, Ramsey cannot anticipate claim 21. Claims 24 and 25 depend from and contain all the limitations of claim 21. Thus, claims 24 and 25 are not anticipated by Ramsey for at least the same reasons.

Accordingly, it is respectfully requested that the rejection of claims 1, 4-9, 12-15, 17, 18, 20, 21, 24, and 25 under 35 U.S.C. § 102(b) as being anticipated by Ramsey, be reconsidered and withdrawn.

35 U.S.C. § 103(a) Rejection

The rejection of claims 2, 3, 10, 11, 16, 22, and 23 under 35 U.S.C. § 103(a), as being unpatentable over Ramsey in view of Bentsen et al, is respectfully traversed based on the following.

Claims 2, 3, 10, 11, 22 and 23 have been canceled.

While the Office Action acknowledges that Ramsey does not disclose a micro pump, the Office Action cites Bentsen as disclosing micro pumps for facilitating fluid transport within microfluidic devices (Office Action, p. 5).

While Bentsen does disclose a piezoelectric valve-less diffuser micro pump, there is no disclosure in Bentsen regarding the flow pass impedance of the diffusers. In fact, the only disclosure of the pump in Bentsen is with respect to the construction of microchannels using a molding process (col. 4, lines 36-48).

Claims 16 recites, *inter alia*,

a micro pump having a first diffuser on one end of a chamber and a second diffuser on the other end of the chamber, the first diffuser being connected to the fine flow pass,

wherein a flow pass impedance of the first diffuser under a first pressuring condition of a chamber of the micro pump is greater than that of the second diffuser under the first pressuring condition, and wherein a flow pass impedance of the first diffuser under a second pressuring condition of the chamber is smaller than that of the second diffuser under the second pressuring condition.

As discussed above, Bentsen discloses a piezoelectric valve-less diffuser micro pump. However, there is no disclosure in Bentsen regarding the flow pass impedance of the diffusers. Thus, Bentsen does not disclose that a flow pass impedance of the first diffuser under a first pressuring condition of a chamber of the micro pump is greater than that of the second diffuser under the first pressuring condition, nor does Bentsen disclose that a flow pass impedance of the first diffuser under a second pressuring condition of the chamber is smaller than that of the second diffuser under the second pressuring condition.

Since neither Ramsey nor Bentsen discloses first and second diffusers with these characteristics, claim 16 is novel and non-obvious over Ramsey and Bentsen, individually or in combination.

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Amendment dated _____
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Accordingly, it is respectfully requested that the rejection of claim 16 under 35 U.S.C. § 103(a) as being unpatentable over Ramsey in view of Bentsen et al, be reconsidered and withdrawn.

New claims 26-31 have been added to provide a more adequate basis for protection of the invention. New claims 26-27 include limitations that are not disclosed or suggested by the prior art and therefore are considered to be in condition for allowance. New claims 28, 29, 30 and 31 depend from claims 1, 9, 17 and 21, respectively. Since claims 1, 9, 17 and 21 are considered allowable over the prior art, claims 28-31 are considered to be in condition for allowance.

CONCLUSION

Wherefore, in view of the foregoing amendments and remarks, this application is considered to be in condition for allowance, and an early reconsideration and a Notice of Allowance are earnestly solicited.

This Amendment increases the number of independent claims by 2 from 5 to 7, does not increase the total number of claims and does not present any multiple dependency claims. Accordingly, a Response Transmittal and Fee Authorization form authorizing the amount of \$172.00 to be charged to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260 is enclosed herewith in duplicate. However, if the Response Transmittal and Fee Authorization form is missing, insufficient, or otherwise inadequate, or if a fee, other than the issue fee, is required during the pendency of this application, please charge such fee to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260.

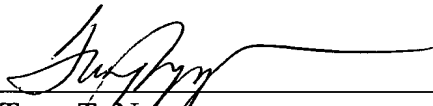
Any fee required by this document other than the issue fee, and not submitted herewith should be charged to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260. Any refund should be credited to the same account.

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If an extension of time is required to enable this document to be timely filed and there is no separate Petition for Extension of Time filed herewith, this document is to be construed as also constituting a Petition for Extension of Time Under 37 C.F.R. § 1.136(a) for a period of time sufficient to enable this document to be timely filed.

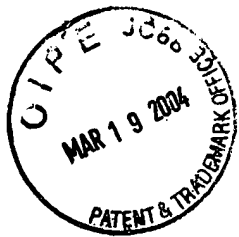
Any other fee required for such Petition for Extension of Time and any other fee required by this document pursuant to 37 C.F.R. §§ 1.16 and 1.17, other than the issue fee, and not submitted herewith should be charged to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260. Any refund should be credited to the same account.

Respectfully submitted,

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PAPERS: CERTIFIED COPIES OF PRIORITY
DOCUMENTS (1 page) Japanese Patent Appl. No. 2001-305237
(30 pages, including cover page) and Japanese Patent Appl. No.
2000-352661 (29 pages, including cover page (Via 1st Class Mail,
with Mail Certification)

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TITLE: MICROCHIP

THE STAMP OF THE PATENT AND TRADEMARK OFFICE
HEREON INDICATES RECEIPT OF THE ABOVE-IDENTIFIED DOCUMENT

